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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
P.O. Box 45155
Salt Lake City, UT 84145-0155
http://www.blm.gov/ut/st/en.html

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
OIL SHALE (3900)
UTU-84087
(UT-923)

MAR 26 2009

CERTIFIED MAIL—Receipt Requested 7008 0150 0001 1073 3220

Oil Shale Exploration Company (OSEC)
3601 Spring Hill Business Park Suite 210
Mobile, Al 36608

Re: Comments on Plan of Development dated August 2008, Federal Oil Shale Research Development and Demonstration lease UTU-84087

Dear Mr. Elcan:

Background: On August 21, 2008, BLM received your revised Plan of Development for review and approval. This is a re-submission of a plan of operations that has been previously submitted to BLM for approval. This plan covers the Phase II portion of your Federal Oil Shale Research Development and Demonstration (R, D&D) lease. Phase II as described in the plan is to re-open the White River Oil Shale mine and extract a large sample of oil shale and then bring the ATP processor on-site and process the sample. After this is completed the plant would be disassembled, the spent shale would be placed in a lined containment area and the remainder of the site would be reclaimed including filling of the shafts.

This plan of development is to be a consolidated plan submitted to complete the requirements of both BLM and the Utah Division of Oil Gas and Mining (DOGM). BLM has found deficiencies in your plan and they are attachments to this letter. We have tried not to duplicate the comments DOGM provided previously. BLM has coordinated our response to you with DOGM. DOGM has some separate requirements that may differ from BLM's and require different items to be addressed; however the plan will be approved by both agencies.

BLM has received a copy of the correspondence with the Region 8 of the Environmental Protection Agency (EPA) and OSEC, where EPA suggested that OSEC should apply for a National Pollution Discharge Elimination System (NPDES) permit. This should be submitted as part of your plan. Please revise your plan and address the deficiencies that are listed by BLM and DOGM.

RECEIVED
MAR 30 2009
DIV. OF OIL, GAS & MINING

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If you have any questions, please contact Mr. Stan Perkes (801-539-4036) of my staff.

Sincerely,

Kent Hoffman

Kent Hoffman
Deputy State Director
Lands & Minerals

Attachment: As stated

Cc: Vernal Field Office (Mr. Jerry Kencza)
Mr. Howard Earnest, 458 Mesa Drive, Rifle, Co 81650
Mr. Gary Aho, 818 Taughenbaugh Blvd, Rifle, CO 81650
Utah Division of Oil, Gas and Mining, 1594 West Temple, Salt Lake City, UT 84114
(Attn: Leslie Heppler, Dana Dean)

OSECletter2ndcommentSP-SA-3-24-09

Comments on the Plan of Development:

1. Page 11: Mine Dewatering, General comment. "As the water is discharged to the dry wash, bitumen-related hydrocarbons would be removed using an oil-water separator" . The statement should read that prior to the discharge into the dry wash. The location should be identified. The monitoring plan should be daily and then the AO can approve a less stringent plan. A discharge standard should be identified so the samples that are taken have an action level. The BLM requires the plan to discuss where any hydrocarbons will be located, disposition and any spill containment that is required.

2. The lessee must show how the mine will be dewatered after the initial dewatering has taken place. This should include pumping all water from the fresh water sump. (If a new sump is considered this should be part of the mine plan). All discharge points should be rip rapped in order to avoid erosion. The discharge around the portal area and the stock piles should be cut with grader to ensure proper drainage.

3. Page 12. Portal Plug removal. The portal was plugged using materials from waste pile that the road header made during construction. There was approximately 2 feet of topsoil placed on the plug. This should be removed prior to the remainder of the plug being removed.

4. Page 15. Underground Mine Operations. With the new hoist house construction, there should be a commitment that As-Built drawings will be provided to the BLM after construction. The lessee must commit to remove the hoist and other items to an approved landfill and this site should be identified in the plan.

5. Page 21. The cooling zone is required to have a secondary containment to control any mishaps.

6. Page 25. Soils. The depth of the soils should be shown on Table 3.

7. Page 26. Soils. BLM will require that the soil pile not exceed 6 feet in height in order to maintain the viability of the soils.

8. Page 49. The statement, "The existing stockpiles of previously mined oil shale will remain unreclaimed (consistent with the terms of the right-of-way). Map 4 shows the existing stockpiles are on the lease and not on the ROW's. This text should be fixed.

9. Page 50. The plan states that the shafts will be filled to ground level. BLM will require that the fill material be stacked above the surface grade in the shafts to handle compaction issues. The large shaft will take some time to come to equilibrium. The shaft sites need to be fenced with 8 foot high chain link and double gates for entrance until the shafts come to equilibrium. Agipito recommended that a bentonite plug be placed in the 30 foot shaft below the Birds nest Aquifer zone to ensure gas does not escape. This should be considered in the design and bond calculation. There should be a

commitment in the plan to provide a detailed closure plan for the shafts and portals prior to the commencement of the closure.

10. Page 51. There is a reference to 24,650 yds of material to be used for fill material for the shafts. On page 50 it states that 29,500 yds will be used. These two numbers are inconsistent. The JBR spread sheet should be put into the plan with an addition for material to be placed in the mine openings. This would include about 600 yds of additional material in the 30 foot shaft for the hoist chamber (40'W X 200'L X30'H).

11. The plan shows on map figure 18 that the toe of the main waste pile for the shaft reclamation will not be used. The plan must address how the material will be removed from the pile and placed in the shafts if the toe of the pile will not be utilized.

12. The reclaimed lope is less than 1.5:1 on the top portions of the pile. BLM feels the soil may not stay on top of the rock at that slope and there is sufficient material to decrease the slope angle. This needs to be addressed.

13. Page 54. Seeding Method. BLM requests that the plan state that a seeding plan will be submitted and approved to BLM prior to reclamation to outline the seed mix and the type of seeding. With a commitment to provide a seeding plan prior to reclamation we can ensure the latest seed mix information. The Vernal Field Office of BLM suggests the following seed mix at this time.

Final Reclamation Seed Mix (recommendation)		
Western Wheatgrass	Pascopyrum smithii	2 lbs/acre
Ephraim Crested Wheat	Agropyron cristatum v. Ephraim	2 lbs/acre
Slender Wheatgrass	Elymus trachycaulus	2 lbs/acre
Globemallow	Sphaerealcea coccinea	1 lb/acre
Shadscale	Atriplex confertifolia	2 lbs/acre
Fourwing Saltbush	Atriplex canescens	2 lbs/acre
Forage kochia	Kochia prostrate	0.5 lbs/acre
Topsoil Mix		
Western Wheatgrass	Pascopyrum smithii	2 lbs/acre
Ephraim Crested Wheat	Agropyron cristatum v. Ephraim	2 lbs/acre
Slender Wheatgrass	Elymus trachycaulus	2 lbs/acre
Shadscale	Atriplex confertifolia	2 lbs/acre

14. Page 01520-2 Sediment and Erosion Control: The spec calls for on-site disposal of silt or other areas approved by the OWNER. There is no place for in the plan for this. If it is to be disposed of on-site then there needs to be an analysis of the material that there are no hazardous materials in silt and this needs to be certified in a report to the AO prior to disposal. The Owner referenced in the specifications should be identified.

15. Page 0110-2 Clearing and Grubbing: 3.4 references a Mulch stockpile. This has not been addressed the mine plan or on the maps.

16. Page 02222-1 Earth Works: The spec's call out for a CQA plan. This is not identified what this plan is or what the abbreviation stands for.

17. There is a specification for the Geotextile filter layer (Section 02240) and there is a specification for the Geomembrane Liners (02775) but there is no specification for the Geotextile Cushon called out in the drawings (Typical Details sheet 11/11). On page 02245-5 there is a reference to a geomembrane liners and the "cover geomembrane". A cover geomembrane is not called out in the drawings.

18. Page 02272-20 contains the required geomembrane seam properties for a 60 mil HDPE (Table 02272-2) and not an 80 mil HDPE as stated in Table 02272-1.

19. Page 02272-18 states a "Thickness of Soil above Geomembrane (inches)". There is no soil to be placed on the Geomembrane liner until reclamation.

20. Appendix 3. The slope analysis has the pile sitting directly upon the bed rock but the specifications call for Earthwork. Page 0222-3 states that Fill, backfill and embankment materials shall be selected or processed clean, fine earth, rock, gravel, or sand;... Later in the specification it calls for these materials to be compacted.

21. BLM requires a stability analysis because of the cushion/geotextile membrane liner interface (plastic on plastic).

22. The lessee must state how the design of the spent shale pile addresses the stipulation in the lease which states, *Wastes*

    - The environmental controls to be required for the disposal of spent shale will be approved by the BLM as well as other regulatory authorities as appropriate. The spent shale disposal areas for Phases 2 and 3 will be designed and constructed to prevent contact with storm water from other areas and minimize infiltration of precipitation that lands on the shale pile. The disposal areas will also have drainage features to control runoff. Monitoring of the spent shale disposal areas and runoff areas will be conducted throughout the project. Until the Phase 1 and Phase 2 testing results demonstrate that the spent shale is not a hazardous material, it will be isolated from the environment. The results of the Phase 1 and, if necessary, Phase 2 testing will be used to determine the continued need for an impervious liner to isolate the spent shale from the environment.

    The TCLP test for metals in the Phase I portion of the project showed the metals did not exceed the Hazardous thresholds located in 40 CFR 261.24 (D). The organics that were run by OSEC did not exceed this same threshold, but the samples did exceed the holding time in accordance with the TCLP test procedures and therefore the results are subject to error. Therefore, because the Phase I test results for the organics are in-question, the tests have not conclusively shown that the spent shale is or is not hazardous. However, based on the temperatures of the pyrolysis and combustion chambers in the ATP process (500 and 650 degrees centigrade respectively), there is a low likelihood that these chemicals would be found in quantities that would exceed the

hazardous waste contaminant regulatory levels listed below. The Phase II testing would confirm this conclusion.

The following table is the resultant of the TCLP tests for Hazardous wastes:

40 CFR 261.24 (D): Hazardous Waste Definitions.

EPA HW No.[1]	Contaminant	Type	OSEC-1 Levels (mg/L)	OSEC-2 Levels (mg/L)	Regulatory Level (mg/L)
D004	***Arsenic***	Metal	***<0.04***	***<0.04***	*5.0*
D005	***Barium***	Metal	***.333***	***.342***	*100.0*
D018	Benzene	Volatile	<0.004	<0.004	0.5
D006	***Cadmium***	Metal	***<0.005***	***<0.005***	*1.0*
D019	Carbon tetrachloride	Volatile	<0.01	<0.01	0.5
D020	Chlordane	Pesticide	No Sample	Chlordane is a manufactured chemical that was used as a pesticide in the United States from 1948 to 1988. It does not occur naturally in the environment.	0.03
D021	Chlorobenzene	Volatile	<0.004	<0.004	100.0
D022	Chloroform	Volatile	<0.004	<0.004	6.0
D007	***Chromium***	Metal	***<0.01***	***<0.01***	*5.0*
D023	o-Cresol (2-Methylphenol)	Semi Volatile	<0.004	<0.004	[4]200.0
D024	m-Cresol (3-Methylphenol)	Semi Volatile	<0.008	<0.008	[4]200.0
D025	p-Cresol (4-Methylphenol)	Semi Volatile	<0.008	<0.008	[4]200.0
D026	Cresol				[4]200.0
D016	2,4-D	Herbicide	<0.004	<0.004	10.0
D027	1,4-Dichlorobenzene	Volatile	<0.004	<0.004	7.5
D028	1,2-Dichloroethane	Volatile	<0.004	<0.004	0.5
D029	1,1-Dichloroethylene (1,1-Dichloroethene)	Volatile	<0.004	<0.004	0.7
D030	2,4-Dinitrotoluene	Semi Volatile	<0.004	<0.004	[3]0.13
D012	Endrin	Pesticide	No Sample	Endrin is a pesticide primarily used on cotton, insects, and rats. It also acts as an avicide. As a rodenticide, it is used to control voles and mice.	0.02
D031	Heptachlor (and its epoxide)	Pesticide	No Sample	Heptachlor. The pesticide is formed from heptachlor in the environment. It was once used as a non-agricultural insecticide. Most uses of the product were canceled in 1978.	0.008
D032	Hexachlorobenzene	Semi Volatile	<0.004	<0.004	[3]0.13
D033	Hexachlorobutadiene	Semi Volatile	<0.004	<0.004	0.5

D034	Hexachloroethane	Semi Volatile	<0.004	<0.004	3.0
D008	***Lead***	Metal	***<0.04***	***<0.04***	***5.0***
D013	Lindane	Pesticide	No Sample	Lindane is an agricultural insecticide and a pharmaceutical	0.4
D009	***Mercury***	Metal	***<0.0002***	***<0.0002***	*0.2*
D014	Methoxychlor	Pesticide	No Sample	Methoxychlor is used to protect crops, [illegible], livestock, and pets against flies, mosquitoes, cockroaches, and other insects	10.0
D035	Methyl ethyl ketone (2-Butone)	Volatile	<0.01	<0.01	200.0
D036	Nitrobenzene	Semi Volatile	<0.004	<0.004	2.0
D037	Pentrachlorophenol	Semi Volatile	<0.02	<0.02	100.0
D038	Pyridine	Semi Volatile	<0.008	<0.008	5.0
D010	***Selenium***	Metal	***<0.04***	***<0.04***	*1.0*
D011	***Silver***	Metal	***<0.01***	***<0.01***	*5.0*
D039	Tetrachloroethylene (Tetrachlorethene)	Volatile	<0.004	<0.004	0.7
D015	Toxaphene	Pesticide	No Sample	Toxaphene was used as an insecticide. It was used to treat crops in cotton in California in the 1970s, although there were reports of cattle deaths following spraying with toxaphene. In 1990, it was banned for all uses in the United States	0.5
D040	Trichloroethylene (Trichloroethene)	Volatile	<0.004	<0.004	0.5
D041	2,4,5-Trichlorophenol	Semi Volatile	<0.02	<0.02	400.0
D042	2,4,6-Trichlorophenol	Semi Volatile	<0.004	<0.004	2.0
D017	2,4,5-TP (Silvex)	Herbicide	No Sample	Silvex and 2,4,5-T (2,4,5-trichlorophenoxyacetic acid). The latter is a major active ingredient of Agent Orange (q.v.).	1.0
D043	Vinyl chloride	Volatile	<0.004	<0.004	0.2

Reference: 40 CFR 261 24 (D): Hazardous Waste Definitions

Organic results in Red are suspect due to the holding times being exceeded for the TCLP test for volatile compounds (14 days). Organic results in Blue are suspect due to the holding times may have been exceeded (40 days) for semi-volatile compounds. ***Italicized bolded*** results are metals which were in analyzed within the specified holding times for the TCLP test. Organic results in Purple are values for herbicides and only one was tested. Organic results in Green are pesticides and none were tested.

The material was processed in mid September 2006 in Canada (One drum has a date of September 13, 2006). The lab received the OSEC samples on 16 November 2006. EPA testing procedures state for volatiles the holding time is 14 days and for semi-volatiles it is 40 days. (Reference: EPA Method 1311 TCLP procedures page 21).

Values in the table show the results from testing the specific constituents from the spent shale that was processed from the oil shale that has been sitting on the surface at the White River Oil Shale mine site for over 25 years. These values do not represent processed shale taken directly from the mine.

23. Page 16, Sampling and Analysis Plan (SAP)-SPENT OIL SHALE: The detailed SAP according to the Phase II mining plan will include detailed procedures for sampling, testing and analysis of the data for the ATP process including the spent oil shale. Because the spent shale organic sample holding times were exceeded during the Phase I testing effort, it is technically unclear whether the spent shale is hazardous or not as far as the organic constituents are concerned. In order to alleviate this concern, the Phase II mining plan submittal must identify details of sampling of the spent oil shale and what parameters will be tested. This will be the basis for making the determination whether or not the spent shale is hazardous. The SAP in the mining plan must address what sampling parameters would be included for the spent oil shale. These would include, but not limited to such items as, (1) the method(s) of sampling and testing according to the appropriate TCLP and EPA protocols/methods; (2) a list of the constituents that will be tested; and (3) the reason for NOT testing any constituents listed in 40 CFR 261.24 (D). Items such as location of other sampling points, physical properties, and temperatures etc. will not be required at this point in time but can be submitted as part of the overall SAP.

24. Bond Estimate. The Bond estimate has the backfilling of the shafts at just over $14,000. This does not match with BLM's estimate from Agipito and Associates of over $600,000. This needs to be addressed.

25. Page 47: Air Quality. The plan of development should have a provision in it to provide the AO with an Air Pollution Control Plan for review. The plan should address how the standard of 100 tons in any 12 month period will not be exceeded as per the plan of development. The plan should also include how a 95% removal efficiency for sulfur dioxide (SO2), carbon monoxide (CO) and particulate matter (PM) will be met.

26. The plan of development should have a soil sample plan for review and approval be submitted to the AO prior to construction. The area to be analyzed is the area of the processing cooling zone and the spent shale pile area. The plan shall include the analyses necessary to determine constituents both in the background levels and end of final processing of the soils where the cooling will take place. The plan shall address the number and location of the samples.

27. BLM will require the following success rate on vegetation. This should be placed in the plan. Establish a desired self-perpetuating diverse plant community by obtaining 75% **basal cover** based on similar undisturbed adjacent native vegetative community, and comprised of desired species and/or seeded species within 5 years of initial reclamation action. However if after three (3) growing seasons there is less than **30%** of the basal cover based on similar undisturbed native vegetative community, then the Authorized Officer may require additional seeding efforts. These requirements can be waived fully or in-part by the AO if sufficient justification is submitted.

28. BLM will require a negative CERCLA certification. CERCLA Chemicals: No chemicals subject to SARA Title III in amounts greater than 10,000 lbs will be used or stored on the lease. If this cannot be done there should be a plan to address these chemicals.